

4B

BMP Revisions and Water Savings Assumptions

Table 4B-1 provides a synopsis of revisions to urban water conservation BMPs, as adopted by CUWCC in September 1997.

Table 4B-2 summarizes BMP water savings assumptions specified in the Urban MOU. These assumptions served as the basis for urban water use study conservation savings calculations, according to the following general formula:

$$S_{c,w,t} = U_{w,t} * R_{c,w} * P_{c,w,t}$$

where

$S_{c,w,t}$ = water savings resulting from the implementation of conservation measure c , in water use category w , at time t , expressed in gallons per day

$U_{w,t}$ = base year water use in water use category w at time t , expressed in gallons per capita per day

$R_{c,w}$ = reduction in water consumption resulting from the implementation of conservation measure c , in water use category w , expressed as a proportion of base year water use

$P_{c,w,t}$ = population affected by conservation measure c , in water use category w , at time t

TABLE 4B-1
BMP Revisions
Changes to Existing BMP Definitions, Implementation Schedules, Coverage Requirements, and Reporting Requirements Contained in Exhibit 1 of the MOU

<i>BMP Number</i>	<i>BMP Name</i>	<i>Changes to BMP Definition</i>	<i>Implementation Schedule</i>	<i>Changes to Coverage Requirement</i>	<i>Changes to Reporting Requirement</i>
1	Water Survey Programs for Single-Family Residential and Multifamily Residential Customers	<p>Removes requirement to specifically target top 20% of residential water users. Allows agencies to develop targeting and marketing approaches tailored to their service areas.</p> <p>Specifies minimum audit elements. Requires agencies to develop database to track program.</p>	<p>Extends the implementation schedule 10 years from the date the BMP is revised or the date an agency signs the MOU, whichever is later.</p>	<p>Replaces the requirement that 70% of the top 20% of residential customers accept an audit by September 1, 2001, with the requirement that 15% of residential customers accept an audit within 10 years of the date of implementation for the agency.</p>	<p>Requests similar types and amounts of information as currently being collected in CUWCC annual reports.</p>
2	Residential Plumbing Retrofit	<p>Adds requirement that agencies maintain device distribution programs at levels sufficient to distribute retrofit kits to not less than 10% of residential accounts each reporting period until coverage requirement is met. Allows agencies to use mass</p>	<p>Replaces the requirement that agencies realize the coverage requirement by September 1, 2001, with the requirement that they maintain the program at specified level until they can demonstrate coverage requirement is met.</p>	<p>Replaces the requirement that 75% of single-family and 80% of multifamily residences constructed prior to 1980 are retrofitted with the requirement that 75% of single-family and multifamily residences constructed prior to 1992 are retrofitted.</p>	<p>Requests similar types and amounts of information as currently being collected in CUWCC annual reports.</p>

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BMP Revisions

Changes to Existing BMP Definitions, Implementation Schedules, Coverage Requirements, and Reporting Requirements Contained in Exhibit 1 of the MOU (continued)

<i>BMP Number</i>	<i>BMP Name</i>	<i>Changes to BMP Definition</i>	<i>Implementation Schedule</i>	<i>Changes to Coverage Requirement</i>	<i>Changes to Reporting Requirement</i>
3	System Water Audits, Leak Detection and Repair	Replaces requirement that agencies conduct a complete system audit every three years with requirement that agencies conduct annual pre-screen audits and conduct full system audits only if indicated by the pre-screen audit.	Makes implementation schedule relative to the date the BMP is revised or the date an agency signs the MOU, whichever is later.	No change.	Requests similar types and amounts of information as currently being collected in CUWCC annual reports.
4	Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections	Adds requirement that agencies assess feasibility of program to retrofit mixed-use metered accounts with dedicated irrigation meters.	Makes implementation schedule relative to the date the BMP is revised or the date an agency signs the MOU, whichever is later. Extends date that coverage requirement must be met from September 1, 2001, to 10 years from the date the BMP is revised or the date an agency signs the MOU, whichever is later.	No change.	Requests similar types and amounts of information as currently being collected in CUWCC annual reports.

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BMP Revisions

Changes to Existing BMP Definitions, Implementation Schedules, Coverage Requirements, and Reporting Requirements Contained in Exhibit 1 of the MOU (continued)

<i>BMP Number</i>	<i>BMP Name</i>	<i>Changes to BMP Definition</i>	<i>Implementation Schedule</i>	<i>Changes to Coverage Requirement</i>	<i>Changes to Reporting Requirement</i>
5	Large Landscape Conservation Programs and Incentives	<p>Adds requirement that agencies develop water use budgets for accounts with dedicated irrigation meters.</p> <p>Removes requirement to specifically target landscapes of 3+ acres for audits. Continues to require audits for customers without landscape water use budgets. Continues to require customer incentive programs.</p> <p>Allows agencies to develop targeting and marketing approaches tailored to their service areas. Requires agencies to develop database to track program.</p>	<p>Makes implementation schedule relative to the date the BMP is revised or the date an agency signs the MOU, whichever is later. Allows agencies 10 years from date BMP implementation is to be underway to meet coverage requirement. Allows agencies four years to develop water use budgets for dedicated irrigation meter accounts.</p>	<p>Removes requirement that agencies offer audits to 100% of accounts with 3+ acres of landscape by September 1, 2001. Adds requirement that agencies provide landscape audits to 15% of mixed-use, non-residential accounts within 10 years from date BMP implementation is to be underway for agency. Adds requirement that agencies offer audits to no less than 20% of mixed-use, non-residential accounts each reporting period. Allows agencies to satisfy audit requirements by implementing a mixed-use meter retrofit program or a program to develop landscape water use budgets for accounts with mixed-use meters.</p>	<p>Requests data on the number of accounts with dedicated irrigation meters, and number of water budgets established during reporting period. Otherwise, requests similar types and amounts of information as currently being collected in CUWCC annual reports.</p>

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BMP Revisions

Changes to Existing BMP Definitions, Implementation Schedules, Coverage Requirements, and Reporting Requirements Contained in Exhibit 1 of the MOU (continued)

BMP Number	BMP Name	Changes to BMP Definition	Implementation Schedule	Coverage Requirement	Changes to Reporting Requirement
6 (New)	High-Efficiency Washing Machine Rebate Programs	Adds requirement that agencies offer maximum cost-effective customer rebate for high-efficiency washing machines if energy service provider in service area is also offering rebates.	N/A	N/A	N/A
7	Public Information Programs	Adds requirement that agencies conduct public awareness surveys every three years to assess conservation attitudes and guide program design.	Makes implementation schedule relative to the date the BMP is revised or the date an agency signs the MOU, whichever is later.	No change.	Requests similar types and amounts of information as currently being collected in CUWCC annual reports.
8	School Education Programs	No substantive changes.	Makes implementation schedule relative to the date the BMP is revised or the date an agency signs the MOU, whichever is later.	No change.	Requests similar types and amounts of information as currently being collected in CUWCC annual reports.
9	Conservation Programs for Commercial, Industrial, and Institutional Accounts	Replaces audit requirement with a two track approach. An agency can choose either to implement an audit program for CII customers, or to meet a water savings performance target for the CII sector.	Makes implementation schedule relative to the date the BMP is revised or the date an agency signs the MOU, whichever is later. Allows agency 10 years from date BMP implementation is to be started to begin meeting coverage requirement.	Requires either 10% of commercial, industrial, and institutional accounts to accept an audit within 10 years or a reduction in water use by commercial, industrial, and institutional accounts by an amount equal to 10% of the use by the top 10% of accounts.	Requires agencies to substantiate either completed audits or water savings estimates. Requests substantially more information on program design and implementation than what is currently being collected through CUWCC annual reports.

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BMP Revisions

Changes to Existing BMP Definitions, Implementation Schedules, Coverage Requirements, and Reporting Requirements Contained in Exhibit 1 of the MOU (continued)

BMP Number	BMP Name	Changes to BMP Definition	Implementation Schedule	Changes to Coverage Requirement	Changes to Reporting Requirement
10 (New)	Wholesale Agency Assistance Programs	Defines wholesale agency support roles in terms of financial, technical, and programmatic assistance to retail agencies implementing BMPs.	Makes implementation schedule relative to the date the BMP is revised or the date an agency signs the MOU, whichever is later.	Requires wholesalers to justify financial, technical, and programmatic support levels.	Requires additional reporting by wholesale agencies over what is currently being collected through CUWCC annual reports.
11	Conservation Pricing	Retains current definitions of non-conserving and conserving rate structures. Adds requirement that CUWCC undertake a study to empirically assess the effect of rate structure on customer water use patterns and quantities, and to specifically examine the relationship between customer demand and the proportion of agency revenue requirement recovered through commodity charges, fixed charges, and other service charges.	Makes implementation schedule relative to the date the BMP is revised or the date an agency signs the MOU, whichever is later.	No change.	Requests similar types and amounts of information as currently being collected in CUWCC annual reports.
12 (formerly BMP 14)	Conservation Coordinator	No substantive change.	Makes implementation schedule relative to the date the BMP is revised or the date an agency signs the MOU, whichever is later.	No change.	Requests similar types and amounts of information as currently being collected in CUWCC annual reports.

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BMP Revisions
Changes to Existing BMP Definitions, Implementation Schedules, Coverage Requirements, and Reporting Requirements Contained in Exhibit 1 of the MOU (continued)

<i>BMP Number</i>	<i>BMP Name</i>	<i>Changes to BMP Definition</i>	<i>Implementation Schedule</i>	<i>Changes to Coverage Requirement</i>	<i>Changes to Reporting Requirement</i>
13	Water Waste Prohibition	No substantive change.	Makes implementation schedule relative to the date the BMP is revised or the date an agency signs the MOU, whichever is later.	No change.	Requires similar types and amounts of information as currently being collected in CUWCC annual reports.
14 (formerly BMP 16)	Residential ULFT Replacement Programs	Removes reference to CII ULFT replacement requirements; otherwise no substantive change.	Makes implementation schedule relative to the date the BMP is revised or the date an agency signs the MOU, whichever is later. Allows agency 10 years from date implementation is to commence to meet coverage requirement.	No change.	Requires similar types and amounts of information as currently being collected in CUWCC annual reports.

TABLE 4B-2

BMP Water Savings Assumptions

BMP Number	BMP Name	MOU Savings Assumptions		Reduction Factor	Urban Water Use Study Modeling Assumptions
		Coverage Requirement	Pre-1980 Construction Shower head replacement: 7.2 gpcd Toilet retrofit: 1.3 gpcd Landscape Audit: 10% of outdoor use		
1	Water Survey Programs for Single-Family and Multifamily Customers	15% of residential accounts.	<i>Pre-1980 Construction</i> Shower head replacement: 7.2 gpcd Toilet retrofit: 1.3 gpcd Landscape Audit: 10% of outdoor use	Modeled based on MOU savings assumptions.	
2	Residential Plumbing Retrofit	75% of single-family and multifamily residences.	<i>Pre-1980 Construction</i> Shower head replacement: 7.2 gpcd Toilet retrofit: 1.3 gpcd	Modeled based on MOU savings assumptions.	
3	System Water Audits, Leak Detection, and Repair	Maintain active distribution system auditing program and repair system leaks when cost-effective.	<i>Pre-1980 Construction</i> Shower head replacement: 2.9 gpcd Toilet retrofit: 0 gpcd	Unaccounted water losses assumed to be no more than 10% of total water into the suppliers' system.	Not modeled because statewide average unaccounted water loss currently meets the MOU target value.
4	Metering with commodity rates for all new connections and retrofit of existing connections	100% of unmetered accounts to be metered and billed by volume of use.	20% reduction in demand by retrofitted accounts.	Modeled based on MOU savings assumptions.	
5	Large Landscape Conservation Programs and Incentives	ET _o - based water use budgets for 90% of accounts with dedicated irrigation meters; irrigation water use surveys for 15% of CII accounts with mixed use meters.	15% reduction in irrigation water demand for surveyed landscapes.	Not modeled due to insufficient base year data on landscape water use and acreage.	
6	High-Efficiency Washing Machine Rebate Programs	Cost-effective customer incentive for the purchase of high-efficiency washing machines to be offered if incentives are being offered by local energy provider or wastewater utility.	Not quantified at this time.	Not modeled due to “not quantified” status in MOU.	

TABLE 4B-2
BMP Water Savings Assumptions (continued)

BMP Number	BMP Name	MOU Savings Assumptions		<i>Urban Water Use Study Modeling Assumptions</i>
		Coverage Requirement	Reduction Factor*	
7	Public Information Programs	Maintain an active public information program to promote and educate customers about water conservation.	Not quantified.	Not modeled due to “not quantified” status in MOU.
8	School Education Programs	Maintain an active school education program to educate students in agencies’ service areas about water conservation and efficient water uses.	Not quantified.	Not modeled due to “not quantified” status in MOU.
9	Conservation Programs for Commercial, Industrial, and Institutional Accounts	10% of CII customers to accept a water use survey or reduce water use by CII customers by an amount equal to 10% of baseline CII water use.	<i>Commercial Water Use</i> 12% reduction in water use (gallons per employee per day) occurring from 1980-2000.	Modeled based on MOU savings assumptions.
10	Wholesale Agency Assistance Programs	Report on cost effectiveness of each BMP the agency is potential obligated to support, agency avoided cost per acre-foot of new water supplies, monetary value of financial incentive and resources provided to retail members to assist or support BMP implementation, and amount of verified water savings achieved by each wholesaler-assisted BMP.	<i>Industrial Water Use</i> 15% reduction in water use (gallons per employee per day) occurring from 1980-2000.	Modeled based on MOU savings assumptions.
11	Conservation Pricing	Maintain rate structure consistent with the definition of conservation pricing specified in the MOU.	Not quantified.	Although not quantified by the MOU, this BMP was modeled on the basis of DWR water price forecasts and recent studies of urban water price elasticity in California.

TABLE 4B-2
BMP Water Savings Assumptions (continued)

BMP Number	BMP Name	<i>MOU Savings Assumptions</i>		<i>Reduction Factor*</i>	<i>Urban Water Use Study Modeling Assumptions</i>
		<i>Coverage Requirement</i>	<i>Not quantified.</i>		
12	Conservation Coordinator	Maintain and staff the position of conservation coordinator and provide support staff as necessary.	Not quantified.	Not modeled due to “not quantified” status in MOU.	
13	Water Waste Prohibition	Adopt water waste prohibitions consistent with the provisions specified in the MOU for this BMP.	Not quantified.	Not modeled due to “not quantified” status in MOU.	
14	Residential ULFT Replacement Programs	Savings to equal or exceed water savings achievable through an ordinance requiring the replacement of high water using toilets with ULFTs upon resale.	At least as effective as requiring toilet replacement at the time of resale. (Exhibit 6 of the MOU presents a detailed methodology for estimating savings).	Modeled based on MOU savings assumptions.	

